CLAIMS

What is claimed is:

1. A method for synthesizing a reference value in an electrocardial waveform, comprising:

identifying a triggering event within the electrocardial waveform;

waiting a period of time after the triggering event until the electrocardial waveform enters an interval of relative inactivity;

sampling the electrocardial waveform during the interval of relative inactivity; and

referencing the electrocardial waveform to the sample.

2. The method of claim 1, wherein the interval of relative inactivity occurs during the PT interval of the electrocardial waveform.

3. The method of claim 1, wherein the triggering event is the peak R-value in the QRS complex of the electrocardial waveform.

4. The method of claim 1, wherein the triggering event is the peak R-value in the QRS complex of the electrocardial waveform followed by at least one of: the negative S peak in the QRS complex and the T wave.

5. The method of claim 1, wherein the triggering event is the positive R-value in the QRS complex followed by a period of at least .2 seconds of relative inactivity.

6. The method of claim 5, further comprising the step of measuring successive peak R values and adjusting the period of time used in the waiting step in response to the measuring step.

7. The method of claim 1, wherein the sample supplants a ground provided by a reference electrode used in recording the electrocardial waveform.

8. The method of claim 1, wherein the sampling step includes supplying a reference voltage substantially equal to the value of the sampled voltage.

9. The method of claim 1, wherein the identifying step additionally comprises detecting frequency components in the electrocardial waveform.

10. A system for synthesizing a reference value for an electrocardial waveform, comprising:

at least one electrode input that conveys a voltage representing the electrocardial waveform of a patient;

an event detector that detects an event within the electrocardial waveform,

a timing device that, after a period of time and in response to the event detector, activates a sampling device, wherein

the sampling device determines the reference value to which the electrocardial waveform is referenced.

11. The system of claim 10, wherein the reference value is substantially zero volts.

12. The system of claim 10, wherein the event is the R peak of the QRS complex of the electrocardial waveform.

13. The system of claim 10, wherein the event is an interval of relative inactivity followed by the peak of the QRS complex of the electrocardial waveform.

14. The system of claim 10, wherein the sampling device additionally detects a rate of change in the voltage of the electrocardial waveform, the sampling device determining the reference value based on the sample and the rate of change in the voltage.

15. The system of claim 10, further comprising a processor, coupled to the timing device, for measuring time between successive events in the electrocardial waveform and adjusting the timing device in accordance with the measured time.

16. A device for recording an electrocardial waveform, comprising:

at least one input for receiving a signal from an electrode, the signal representing an electrocardial waveform;

a memory element coupled to the receiver channel, that stores a digitized version of the received signal;

a processor, coupled to the memory, for searching for the peak value of the digitized version of the received signal, the processor also measuring a period of time from the peak value until an expected region of relative inactivity in the digitized version of the received signal and sampling the digitized version of the received signal during the expected region of relative inactivity; and

a reference voltage generator for generating the value of the sample.

17. The device of claim 16, further comprising an amplifier that subtracts the value of the sample from the signal received form the at least one input by way of the at least one input.

18. The device of claim 16, wherein the peak value is the R peak of the QRS portion of the electrocardial waveform.

19. The device of claim 16, wherein the expected region of relative inactivity occurs after the T wave of a first sinus rhythm event but prior to the P

wave of a second sinus rhythm event, wherein both sinus rhythm events pertain to the electrocardial waveform.

20. The device of claim 16, wherein the processor adjusts the sampling as a function of the time between the peak value of a first sinus rhythm event until the peak value of a second sinus rhythm event, wherein both sinus rhythm events pertain to the electrocardial waveform.

21. The device of claim 16, wherein the processor additionally detects the presence of certain frequency components in the digitized version of the received signal.

22. A receiver for receiving an electrocardial waveform, comprising:
means for receiving an input that represents an electrocardial waveform;
means for detecting an event within the electrocardial waveform;
means for measuring a period of time from the detected event; and
means for sampling the electrocardial waveform when the period of time has expired.

23. The receiver of claim 22, wherein the means for detecting the event within the electrocardial waveform further comprises means for detecting the R peak of the QRS complex of the electrocardial waveform.

24. The receiver of claim 23, further comprising means for detecting a negative peak of the QRS complex.

25. The receiver of claim 22, wherein the means for detecting the event within the electrocardial waveform further comprises means for detecting an interval of relative inactivity followed by an R peak of the QRS complex from a previously-recorded electrocardial waveform in order to determine an interval of relative inactivity of a subsequently-recorded electrocardial waveform.

26. The receiver of claim 22, additionally comprising means for detecting frequency components in the electrocardial waveform.

27. A computer-readable media having computer-readable instructions thereon, which, when executed by a computer, cause the computer to execute a method for synthesizing a reference value for an electrocardial waveform, the method comprising:

identifying a triggering event within the electrocardial waveform;

sampling the electrocardial waveform during the interval of relative inactivity; and

referencing the electrocardial waveform to the sample.

28. The computer-readable media of claim 27, further comprising waiting a period of time after the identifying step until the electrocardial waveform enters the PT interval.

29. The method of claim 27, wherein the interval of relative inactivity occurs during the PT interval of the electrocardial waveform.

30. The method of claim 27, wherein the triggering event is the peak R value in the QRS complex of the electrocardial waveform.

31. The method of claim 27, wherein the triggering event is the positive peak R value in the QRS complex of the electrocardial waveform followed by at least one of: the negative peak in the QRS complex and the T wave.

32. The method of claim 27, wherein the sampling step includes supplying a reference voltage substantially equal to the value of the sample.